Palmetto Aviation

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Alan Alexander Presents Award To John Hamilton

Commission Employees Receive Service Awards

Five Aeronautics Commission employees, including director John W. Hamilton, received service certificates and pins recognizing their years of service in state government recently.

Director Hamilton received a certificate and pin for 20 years service. Also receiving 20 year certificates were Dan Fraley, assistant to the director and Lester Smith, maintenance worker. Sammie Howard, recently retired from the maintenance division, received a certificate and pin recognizing his 30 years service.

Chief pilot, H. Flowe Trexler, received a 10-year certificate.

SCAC Disbursed Record Funds in December

The S.C. Aeronautics Commission disbursed more than $740,000 for airport capital improvements in December, the most ever expended in one month by the commission.

The Charleston County Aviation Authority received $372,423 for relocation of the Air Force hazardous cargo area so a new terminal can be built on the site. Total project cost will be about $4 million.

Columbia Metropolitan Airport received $307,487 to complete a runway overlay project and Greenville-Spartanburg Jetport received $61,705 for removal of a hillside near the runway and runway grooving.

Total state funds disbursed for these projects was $714,615.

New Chart Size Under Consideration by Commission... Page 6, 7 Give us your Input

PALMETTO AVIATION is an official publication of the South Carolina Aeronautics Commission. It is designed to inform members of the aviation community, and others interested in aviation, of local developments in aviation and aviation facilities and to keep readers abreast of national and international trends in aviation.

The Aeronautics Commission is a state agency created in 1935 by the S.C. General Assembly to foster and promote air commerce within the state.

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Newberry Commission is Seeking FBO

The Newberry County Airport Commission is seeking a Fixed Base Operator (preferably an A & P) to manage the airport at Newberry.

The lease would include all the activities normally associated with FBO leases including gas sales, tie down fees, maintenance, flight instruction, hangar rental, air taxi service and vehicle rental.

Anyone interested, please get in touch with P. D. Johson, P.O. Box 357, Newberry, S.C. 29108 • Telephone 276-2911.

David Brinson Promoted At Hawthorne Aviation

Vernon B. Strickland, president of Hawthorne Aviation, has announced the promotion of David Brinson to distribution sales manager for the company's aero sales division.

Brinson's responsibilities will involve managing the two and a half state Piper Aircraft distributorship.

Brinson joined Hawthorne in 1977 as Sales Manager of the eastern territory. He lives in Summerville with his wife, Myra and their two children.

Hawthorne Aviation's corporate headquarters are based in Charleston along with a general aviation operation. Other divisions include government contracts and the aero sales division.

Montana Youth Solos 58 Aircraft

Sixteen-year-old Gary Blain of Montana spent his birthday recently soloing 58 different aircraft, including five helicopters.

Montana and the Sky, the Montana Aeronautics Division publication, reported that although planned in advance, the project was a logistical nightmare.

At Laurel Municipal Airport where pilots brought in airplanes for Blain to fly on the morning of his birthday, one observer commented, "It looks like the D-Day invasion."

Blain flew all day and by days end became the world's champion solo artist. The previous record was held by a California girl who soloed 37 aircraft on her 16th birthday.

Montana Aeronautics officials documented the event for the Guiness Book of World Records.

Explorer Scouts And 2-33 glider

Explorer Scouts Learn About Soaring

A group of Columbia explorer scouts spent the weekend recently learning about soaring at Cypress Bay Airport.

Cypress Bay, just north of Myrtle Beach, is the home of Carolina Sailplanes which began operations in mid summer offering glider instruction, rides and rentals.

As an introduction to the sport, the scouts saw the film, "Joy of Soaring" produced by the Soaring Society of America. After the orientation film, each of the 17 scouts and four advisors took their introductory rides in a Schweizer 2-33 glider.

Tom Bales, Carolina Sailplanes instructor, said several of the scouts showed outstanding aptitude as pilots and many expressed interest in continuing their training and getting a glider license.

For those without previous flying experience, it takes an average of 30 dual flights to solo, then a minimum of 20 solo glider flights to qualify for a private glider license. Power pilots transitioning to gliders can usually solo in six to eight hours and qualify for a glider rating with a minimum of 10 solo flights.

Advisors to the scouts were Larry Yon, Kerry Hart, Darryll Snyder and Jim Iverson.

Other groups interested in setting up a similar program can contact Bales at Carolina Sailplanes, P.O. Box 241, Little River, S.C. 29566. Telephone 249-4523.

Six Get Wings At Greenville Safety Meeting

Carolyn Pilaar and her students at Carolyn's Flight Academy in Greenville have set a record in the FAA's pilot proficiency training program.

According to Frank Kelley, FAA accident prevention specialist, Ms. Pilaar is the first person in the state to win phase two instructor proficiency wings. Also, five of her students received wings last month at a safety meeting, the most ever awarded at such a meeting since the program began in South Carolina.

Besides Ms. Pilaar, those receiving wings were: Tom Guest, Doug Kennemore, Bret Brewer, Dale Elmore and Kip Sieber.

The purpose of the program is to encourage refresher training and thereby reduce the rising accident rate among general aviation pilots.

To be eligible for the wings, fixed-wing pilots must complete an hour of flight training in basic control maneuvers, an hour of training concentrating on precision approaches, cross wind, short field landings; an hour of instrument training and attendance at a safety meeting, seminar or clinic conducted by the FAA.

Breakfast Club

The S.C. Breakfast Club will meet in Lugoff, at the Lugoff Holiday Inn Jan. 27.

No location has yet been set for Feb. 10.

The Club will meet in Conway Feb. 24.

New Supersonic Transport on British drawing Boards

An advanced supersonic transport (AST), with more than twice the capacity of the Concorde, is on the drawing boards at British Aerospace in Bristol.

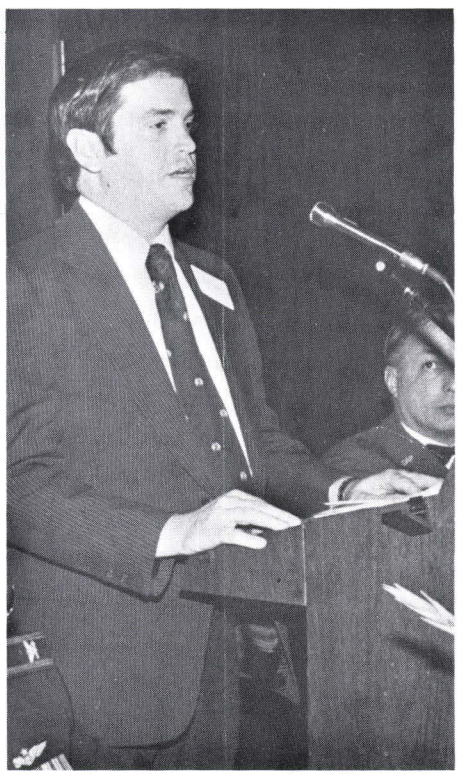
Aimed for the early 1990's, the AST will carry 230 passengers at ranges up to 4,300 miles. The Concorde has a maximum range of about 3,200 miles with 100 passengers.

Several airlines are said to be showing interest on the theory that 230 seats might offer reasonable economic return. The AST's Olympus engines are designed to reduce noise and boost fuel economy.

The Times of London reported the estimated $2.4 billion development costs would be shared between Britain and other countries, notably the U.S.

McDonnell Douglas is developing an AST with the same speed range (about 1,300 mph) and size (225 passengers) but with transpacific range.

Special Rules Set For Winter Games



For those pilots who are planning to fly to Lake Placid, N.Y. for the winter Olympics, the FAA has issued special procedures and regulations which will be in effect during the games.

A temporary control tower has been commissioned at Adirondack Airport. The tower will operate on a 24-hour basis from Feb. 4 through Feb. 25 and on a 16-hour schedule, from 7 a.m. to 11 p.m. at other times. Frequencies are 125.5/257.6. Ground is 121.9.

ATIS information will be available on 124.15 during hours that the tower is operational.

The FAA reminds pilots to expect arrival and departure delays due to the projected traffic volume, runway acceptance rates, limited ramp space and seasonal weather conditions that are forecast to be 70 percent IFR.

A Temporary Flight Restriction (TFR) is in effect in that airspace extending from the surface to and including 10,000 feet MSL in a circular area whose radius is eight and a half statute miles and centered at latitude 44 degrees 16 minutes 35 seconds north, longitude 73 degrees 57 minutes and 16 seconds west. The TRF will be effective from Jan. 27 through March 1. Unless otherwise required or authorized by ATC, flight is prohibited within the TFR.

Montpelier FSS will establish a temporary facility at Burlington International Airport. This facility will be located in the Air North Terminal building and will be staffed on a 24-hour basis from Feb. 5 to March 2.

The Lake Placid, New York Airport will be restricted as a VFR heliport and used solely by helicopters involved directly with the 1980 winter games.

Shown cutting the 38th anniversary cake, from left: Lt. Col. Kaye I. Mellert CAP, S.C. Wing, Chief of Staff; Lt. Col. William E. Hobson CAP, S.C. Wing, Deputy Wing Commander; Col. Louisa S. Morse CAP, Middle East Region Commander; Col. George O. Compton CAP, S.C. Wing Commander.

S.C. Wing Holds Annual Conference

On December 1, 1979 the South Carolina Wing, Civil Air Patrol held its annual Wing Conference at the Quality Inn in Columbia. Upon completion of the seminars being held, a banquet was held to honor award winners of the South Carolina Wing. Keynote speakers for the banquet were Col. Louisa S. Morse, CAP, Middle East Region Commander, and Alan Alexander, Assistant Director, South Carolina Aeronautics Commission.

This annual meeting and banquet was held in conjunction with the 38th Anniversary of Civil Air Patrol. Col. George O. Compton CAP, South Carolina Wing Commander, read a proclamation signed by Governor Richard Riley, proclaiming the week of Dec. 1, 1979 to Dec. 7, 1979, to be Civil Air Patrol Week in South Carolina.

Left, Alan Alexander, assistant to the director, S.C. Aeronautics Commission, addresses the conference. Right, Dexter Martin, first South Carolina Wing Commander, Mrs. Martin and Col. Morse, newly appointed National Controller, pose for photographs.

Mountain Waves

Great Granddaddy of the Wind Shears

Most pilots know very little about the weather phenomenen known as *mountain wave.* Often considered an obscure condition found only in certain areas of the country, mountain waves can:

- Form on ridges whose tops are as low as 300 feet.
- Form and dissolve almost instantaneously along with the level of wind velocity.
- Cause substantial local reductions or increases in air pressure, thereby distorting altimeter readings by as much as 1000 feet.
- Offer no visible indication of their existence.
- Contain severe turbulence and sustained updrafts and down-drafts reaching as high as 5000 FPM.

Mountain waves are considered the great granddaddy of wind shear, and are generally associated with three different wind shear types. (1) *Deflection shear* often occurs when the morning heat from the floor of a valley rises and cooler air moves down the mountain slope as a replacement. This flow is often augmented by strong winds aloft, producing strong return flow at the lower levels. (2) *Rotor shear,* which usually forms over valleys, is a rolling action beneath a terrain induced wave which can produce wind shear and associated updrafts and downdrafts. (3) *Skip shear* occurs when nighttime radiational cooling produces a stable layer of air over a valley floor, and increasing winds aloft "skip" over this layer, creating sufficient velocity to rake the valley.

Causes of mountain wave

When winds in excess of about 25 knots blow roughly perpendicular to a mountain range, large areas of updrafts and downdrafts are formed and can extend many times above the elevation of the mountain peaks. Large waves often form on the leeward side of the mountains and extend upward, beyond the troposphere. In the horizontal dimension, these waves, known as *standing waves,* sometimes extend as much as 100 miles or more downstream from the mountain range. Additionally, the crest of the wave is often not directly above the mountain peak, but tilts upstream, with altitude. Therefore, in many cases it is possible to experience the updraft/downdraft turbulence before actually reaching the terrain associated with the mountain wave.

Probably the most dangerous characteristic of the standing wave is the magnitude of the sustained updraft and downdraft, which can be from 2,000 to 5,000 FPM. Mountain waves occur most often from mid-October to mid-May, with eight to ten instance days a month during that period. The elements usually present when a wave develops are: (1) a 25-knot wind blowing perpendicular to a mountain range at peak level, (2) winds that either increase with altitude or remain strong and steady on into the tropopause, and (3) an inversion or stable layer of air above the mountain tops and below 15,000 feet.

Identifying a mountain wave

If it is cool enough and there is sufficient moisture in the air mass, certain types of clouds associated with mountain waves will form as the air rises over the mountains. These include (1) cap clouds, (2) rotor clouds, (3) lenticular clouds, and (4) mother-of-pearl clouds.

☐ *Cap clouds* surround the top of a mountain and flow down the lee side, often giving the appearance of a waterfall. Downdrafts in the vicinity of the lee side are particularly violent.

☐ *Rotor or roll clouds* resemble cumulus clouds in appearance and are relatively stationary. They are usually found below the mountain top, but they are sometimes twice as high as the peaks. They usually indicate violent air currents, consisting of updrafts on the windward edge and downdrafts on the leeward side.

☐ *Lenticular clouds* are the

Continued on back page

Commission Considering Changing Chart Size

The South Carolina Aeronautics Commission is considering changing the size and scale of the state aeronautical chart and would like to know what South Carolina pilots think of the idea.

The commission is considering changing from the present sectional scale to a smaller WAC-type scale. The WAC charts are easier to handle in the cockpit and they depict more surrounding area, including Atlanta and Charlotte.

At the December Commission meeting, Commission chairman Joe Wilder asked the commission and staff to seek input from pilots on the idea of changing the chart. So, pilots, this is your chance.

If you are unhappy with the present chart, let us know. On the other hand, if you like the present chart, we would like to know that too. After all, the commission publishes the charts for you.

Just indicate your preference on the sheet at right, clip it out and drop it in the mail. We will report the results in a subsequent issue of the newsletter.

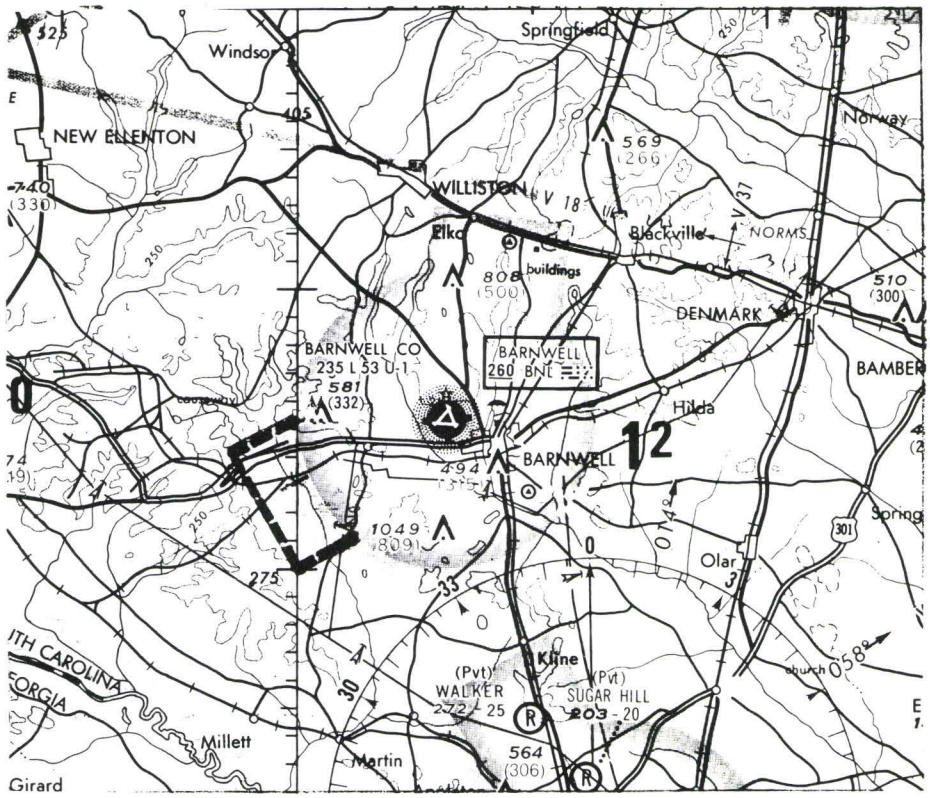
Extension Considered For Barnwell Airport

The FAA has issued a notice of proposed rulemaking which would add an extension to the Barnwell Airport transistion area.

A new instrument approach to runway 4, utilizing the Barnwell NDB, has been developed. The extension is necessary to provide controlled airspace to protect aircraft executing the approach, according to the FAA.

The extension will be similar to the one existing on the north side of the field. Specifically, the boundaries will extend three miles each side of the 240-degree bearing from the Barnwell radio beacon and extend from 6.5 mile radius to 8.5 miles southwest of the RBN.

Interested persons may make comments on the proposed NPRM by Feb. 13 to: FAA, chief, Air Traffic Division, P.O. Box 20636, Atlanta, Ga. 30320.



Indicate your preference here and return to:
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- Do you use The Aeronautics Chart published By The Commission? Yes_____ No_____
- Do you prefer The Sectional or WAC (World Aeronautics Chart) Scale? Sectional_____ WAC_____

Comments _____

_____

SOUTH CAROLINA AERONAUTICS COMMISSION
P.O. Drawer 1987
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Mountain Waves Can Be Hazardous

Continued from Page 6

lens shaped formations that often mark the crest of a standing wave. If there is sufficient moisture content, lenticular clouds will form with cooling air in the updraft and will evaporate while warming in the downdraft. By continuous condensation on the windward side and dissipation on the lee side, the clouds appear to be stationary.

Because humid air takes less vertical distance to reach its condensation level than does drier air, the presence of a lenticular cloud is not necessarily an indication of the strength of the updrafts or downdrafts in a mountain wave. However, lenticular clouds that are ragged or tattered in appearance, with fragments torn from the trailing edge, often indicate a level of turbulence about as violent as that found anywhere in the atmosphere.

☐ *Mother-of-pearl* clouds are pancake shaped in form, and indicate a tremendous vertical development in the mountain wave. They are usually found in the polar regions, and they form at altitudes of 80,000 to 100,000 feet. These cloud formations are visible from great distances and serve as advance warnings of violent wave activity.

While these four types of cloud formations are all signs of mountain wave activity, there are times when there is insufficient moisture content within the air mass to facilitate cloud formations. Consequently, pilots cannot always count on visible indications to aid them in avoiding the often serious consequences of mountain wave penetration.

Experiencing mountain waves

An aircraft approaching a mountain wave with active from a direction opposite the prevailing wind will generally encounter clouds and severe turbulence within 50 miles of the range itself. The area between the first cloud line and the approaching rotor clouds is often smooth, but characterized by an increasing headwind. As the aircraft approaches the rotor cloud, downdrafts may cause it to lose altitude at a rate as high as 3000 FPM, unti it enters the cloud and is again subjected to severe turbulence. When the aircraft emerges from the rotor cloud, the turbulence will subside, and the aircraft will be carried aloft by updrafts until they dissipate.

As the cap cloud area is approached, the aircraft will most likely encounter another area of relatively smooth air, characterized by a downdraft of 3000 to 5000 FPM. An aircraft caught in this situation will probably be unable to climb, and the pilot's only recourse is to turn away from the mountain range.

Mountain waves generally do not extend over 200 miles in depth. Under some circumstances, however, they may be attenuated by other mountain ranges, in which case they can extend for hundreds of miles.

Avoiding mountain waves

Mountain wave activity can usually be predicted from satellite photographs and the 300 millibar upper wind chart. Standing waves, such as the Sierra Wave, are common in the Rocky Mountains and occur in other mountainous areas in varying magnitudes.

Mountain wave conditions should be avoided whenever possible. However, when you must penetrate an area in which mountain wave activity may exist, you should take the following precautions:

(1) Maintain an altitude at least 50% above the highest terrain; (2) Approach the mountain at a 45° angle to better facilitate an evasive maneuver should one become necessary; (3) Avoid lenticular clouds, especially if their edges are ragged and irregular; (4) Avoid penetration of the wave in IFR conditions; (5) Remember that under "dry wave" conditions, all mountain wave violence will exist with none of the visual indications.